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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/741,829	12/19/2003	Dennis Duprey	EMC-03-098CIP1	6176

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EXAMINER	
FARROKH, HASHEM	
ART UNIT	**PAPER NUMBER**
2187	

DATE MAILED: 11/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/741,829	DUPREY ET AL.	
	Examiner	Art Unit	
	Hashem Farrokh	2187	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

The instant application having application No. 10/741,829 has a total of 17 claims pending in the application; there are 3 independent claims and 14 dependent claims, all of which are ready for examination by the examiner.

1. ***ACKNOWLEDGEMENT OF REFERENCES CITED BY APPLICANT***

Information Disclosure Statement

As required by **M.P.E.P. 2001.06(b)** and **37 C.F.R. 1.98(d)**, since the instant application has been identified as a continuation application of an earlier filed application and is relied upon for an earlier filing date under **35 U.S.C. 120**, the examiner has reviewed the prior art cited in the earlier related application as required by **M.P.E.P. 707.05** and **904** and as stated in **M.P.E.P. 2001.06(b),** no separate citation of the same prior art need be made by the applicants in the instant application.

INFORMATION CONCERNING CLAIMS:

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> *The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.*

Claims 1 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

2. *The expression* "non-incremental update" *in these claims is undefined. The Examiner has searched the specification but was not able to find a definition of this*

expression. It would be appreciated if the Applicant point to specification where this expression is defined.

Accordingly a clarification is required.

Claim Rejections - 35 USC § 102

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-17 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,898,681 B2 to Young.

3. In regard to claim 1, Young teaches:

"In a data storage environment having a server **(column 4, lines 34-35)**, a first and second data storage volume **(column 4, lines 34-35; elements 6 and 8 in Fig. 1)**, and production data being stored on the first data storage volume **(column 4, lines 11-15; element 6 in Fig. 1)**, and a copy of the data denominated as the data copy being stored on the second data storage volume **(column 4, lines 11-15; element 8 in Fig. 1)**, a method of handling updates to the data copy when the environment is configured for processing incremental updates to the data copy the method comprising the steps of:" **(e.g., see column 7, lines 47-61; column 8, lines 56-67 and column 9, lines 1-15; Figs. 6a-6b and 71-7f).** *For example the master store represents the first storage volume and shadow store represents the second storage volume recited in the claim. For example Fig. 7a-7b the process of initially copying the point in time of the all three blocks from master store to shadow store by setting all bits corresponding to these*

blocks in the shadow bimap to zero and the copy bitmap to one and after copying is complete setting the corresponding bit in the copy bit map to zero (e.g., non-incremental update). However, if a new data is being written to a block in the master store (e.g., data is updated), the corresponding bit in the shadow bitmap is set to one to indicate that data in master store is different from the shadow store. A new point time of this block will be stored in the shadow store (e.g., incremental update).

(a) responsive to the start of a full non-incremental update to the copy of the data **(column 7, lines 62-67)**, not marking the state of the production data as being ready for being copied;" **(e.g., see column 7, lines 62-67; element 10b in Figs. 7a-7f).**

"(b) updating a session associated with the data copy as being in an inconsistent state with the data copy;" **(e.g., see column 10, lines 45-53).** *For example a logic "1" in the shadow bitmap indicates the corresponding data block in the master store is updated and is inconsistent state with the point time copy in the shadow store.*

"(c) completing the update to the copy of data." **(e.g., see column 8, lines 56-67; column 9, lines 1-15).** *A one in the shadow bit map indicates that the corresponding data block in the master store is new or updated and a point in time of this data block will be stored in the shadow store to complete the update.*

4. *In regard to claims 2 and 10, Young teaches:*

"wherein a step of preparing to update the data copy by protecting the data copy from being written over until the update to the copy of data is performed before the step of completing the full copy." **(e.g., see column 8, lines 56-67; column 9, lines 1-15).** *For example anytime a data block is being overwritten the point in time created, thus the*

previous the point in time is protected unless is instructed by the user to overwrite the point in time copy.

5. *In regard to claims 3, 6, 11, and 14 Young teaches:*

"wherein the session is associated with a tracking data structure." **(e.g., see column 4, lines 65-67 and column 5, lines 1-3; Figs. 7a-7f).** *Young teaches the bitmap is used for tracking the data blocks in the master and the shadow stores.*

6. *In regard to claims 4, 7, 12, and 15 Young teaches:*

"wherein the session is associated with a tracking data structure and a transfer data structure is associated with the step of preparing to transfer data." **(e.g., see column 8, lines 56-67 and column 9, lines 1-15; Figs. 7a-7f).** *The bitmaps tracks the state of data structure and the data is copied or transferred from the master store to shadow store if the bitmap indicates an inconsistence state.*

7. *In regard to claims 5, 8, 13, and 16 Young teaches:*

"wherein the environment includes a first and second data storage system and the first and second data storage volumes are each on different data storage systems from each other." **(e.g., see column 4, lines 1-15; elements 6 and 8 in Fig. 1).**

8. *In regard to claim 9, Young teaches:*

"A system for handling updates to the data copy when the environment is configured for processing incremental updates to the data copy, the system comprising:" **(e.g., see column 7, lines 47-61; column 8, lines 56-67 and column 9, lines 1-15; Figs. 6a-6b and 71-7f).**

"a first data storage volume having production data stored on it;" **(column 4, lines 11-15; element 6 in Fig. 1).**

"a second data storage volume in communication with the first data storage system **(element 4 in Fig. 1)**, and having a copy of the production data denominated as the data copy on the first data volume;" **(column 4, lines 11-15; element 8 in Fig. 1).**

"a server in communication with the first data volume;" **(column 4, lines 34-35).**

"computer-executable program logic configured in relationship to the first and second data storage volume and the server for causing the following computer-executed steps to occur:" **(column 4, lines 40-45; Fig. 2).**

"(a) responsive to the start of a full non-incremental update to the copy of the data (**column 7, lines 62-67**), not marking the state of the production data as being ready for being copied;" **(e.g., see column 7, lines 62-67; element 10b in Figs. 7a-7f).**

"(b) updating a session associated with the data copy as being in an inconsistent state with the data copy;" **(e.g., see column 10, lines 45-53).**

"(c) completing the update to the copy of data." **(e.g., see column 8, lines 56-67; column 9, lines 1-15).**

9. *In regard to claim 17, Young teaches:*

"A program product for use in a data storage environment and being for handling periodic updates to a copy of production data," **(e.g., see column 1, lines 33-36).** *For example making backup of the point in time at a regular interval represents periodic updates recited in the claim.*

"wherein the data storage environment **(Fig. 1)** includes:"

"a first data storage volume having production data stored on it;" **(column 4, lines 11-15; element 6 in Fig. 1).**

"a second data storage volume in communication with the first data storage system **(element 4 in Fig. 1)**, and having a copy of the production data denominated as the data copy on the first data volume;" **(column 4, lines 11-15; element 8 in Fig. 1).**

"a server in communication with the first data volume;" **(column 4, lines 34-35).**

"the program product includes computer-executable logic contained on a computer readable medium and which is configured for causing the following computer-executed step to occur:" **(column 4, lines 40-45; Fig. 2).**

"(a) responsive to the start of a periodic update to the copy of the data **(e.g., see column 1, lines 33-36)**, marking the state of the production data as being ready for being incrementally copied to update the data copy to account for any incremental changes to the production data since either a full copy or a prior incremental copy of the production data was performed;" **(e.g., see column 7, lines 47-61; column 8, lines 56-67 and column 9, lines 1-15; Figs. 6a-6b and 71-7f).**

"(b) preparing to update the data copy by protecting the production data from being written over until an incremental copy operation is performed;" **(e.g., see column 6, lines 1-13).** *For example before data to be overwritten a copy of the data will be copied and stored in the shadow store.*

"(c) updating the data copy in accordance with the incremental copy operation being performed;" **(e.g., see column 8, lines 56-67 and column 9, lines 1-15; Figs. 6a-6b and 71-7f).**

"(d) marking the state of the production data as having been transferred **(e.g., see column 8, lines 56-61)**, and unprotecting the production data thereby allowing it to be written over." **(e.g., see column 8, lines 54-61; Fig. 6b).** *Once the point time copy of data to be overwritten made and stored in shadow store and the corresponding bitmap set the corresponding data will be overwritten.*

Conclusion

The prior art made of record and not relied upon are as follows:

1. U. S. Patent Publication No. 2004/0260873 *to Watanabe describes Method and apparatus for managing replication volumes.*

2. U. S. Patent Publication No. US 2003/0182326 A1 *to* Patterson *describes System and method for coalescing a plurality of snapshots.*

3. U. S. Patent Publication No. 2003/0182330 A1 *to* Manley *et al. describes Format for transmission file system information between a source and a destination.*

Any inquiry concerning this communication should be directed to Hashem Farrokh whose telephone number is (571) 272-4193. The examiner can normally be reached Monday-Friday from 8:00 AM to 5:00 PM.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald A Sparks, can be reached on (571) 272-4201.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information

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HF

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2005-11-13

DONALD SPARKS
SUPERVISORY PATENT EXAMINER